Saskatchewan Labour

Occupational Health and Safety

Accident Investigations

A Guide for Committees and Representatives

Table of Contents Summary

Introduction 1

Part I: Accidents and dangerous occurrences investigated by committees and representatives 5

Part II: Advanced investigation techniques 17

Appendix 61

Bibliography and resource links 77

Please note

Remember that this publication doesn't replace the Act and regulations. You still need to refer to the legislation to find out exactly what requirements apply to your organization. To order a copy of the legislation, contact the Queen's Printer at:

> 1st Floor, 1871 Smith Street, Regina SK S4P 3V7. Phone: (306) 787-6894, or toll free in SK 1-800-226-7302; Fax: (306) 787-9779, (or see the web site at: www.qp.gov.sk.ca).

Workplaces with ten or more workers listed in Table 7 of the Appendix to *The Occupational Health and Safety Regulations* must have an occupational health and safety program. If you must implement a program, read *Elements of an Occupational Health and Safety Program*, and *Setting Up An Occupational Health and Safety Program: A Guide*. The Occupational Health and Safety Division provides both publications. For related regulatory information, read *The Occupational Health and Safety Act*, Part III; and *The Occupational Health and Safety Regulations*, Part IV, and section 22.

Industries under federal jurisdiction — such as transportation, broadcasting, and telecommunications — are governed by *The Canada Labour Code*. If you work in a federally regulated industry, please contact the appropriate agency for information, or visit the Human Resources Development and Canada web site at: http://info.load-otea.hrdc-drhc.gc.ca.

Table of Contents

Introduction 1

What this guide is about 1

The role of the employer 2

The role of investigations conducted by committees and representatives 2

How to use this guide 3

Remember that sometimes you wear two hats 3

Part I: Accidents and dangerous occurrences investigated by committees and representatives 5

Introduction 7

What accidents and dangerous occurrences must be reported to the Occupational Health and Safety Division? 8

What must be in the notices sent to the Division? 9

What must be investigated and reported, and by whom? 10

What else must be investigated? 11

What information must be in regulation 29 and 31 reports? 12

Summary 16

Part II: Advanced investigation techniques 17

Step 1. Collect evidence 19

Introduction 19

Identify, collect, label, and verify physical evidence 20

Collect documentary evidence 24

Interview witnesses 25

Summary 35

Step 2. Analyze the evidence 37

Introduction 37

Analyze the incident factors 38

Identify the direct cause 40

Identify the indirect causes 40

Identify the root causes 41

Summary 44

Step 3. Write the final report 45
Introduction 45
Report introduction 47
Methodology and equipment 47
Incident summary 47
Why the incident happened 48
Findings and recommendations 48
Conclusions 49
Appendices 49
Summary 50
Step 4. Take action 53
Introduction 53
Controlling hazards 54
Correcting weaknesses in the health and safety system 57
Assigning responsibilities for implementing corrective action 58
Monitoring the effectiveness of corrective action 58
Telling the workers what was done 59
Summary 59
Appendix 61
Resources 63
I. Accident investigation forms 63
II. Equipment and resources checklist 76
Bibliography and resource links 77
Publications 77
Internet sites 78

Definitions

- *Accident* means any unplanned event that causes, or may cause, injury, illness, or damage.
- *Accident causes* can include:
  - the *direct* cause (what directly led to the accident, such as an unsafe work practice, an equipment failure, and so forth)
  - the *indirect* causes (working conditions that set the stage for the accident, such as inadequate training, procedures, and so forth)
  - the *root* causes (fundamental flaws that ultimately created the conditions in the work environment leading to the accident — such as inadequate training — that may indicate defects in the employer's health and safety management system)
- *Act* means *The Occupational Health and Safety Act, 1993.*
- *Committee*, or *OHC*, means an occupational health committee required by the Act.
- *Contractor* means a person who, or a partnership or group of persons that, pursuant to one or more contracts, directs the activities of one or more employers or self-employed persons involved in work at a place of employment.
- *Dangerous occurrence* means occurrences discussed in regulation 9 of *The Occupational Health and Safety Regulations, 1996.*
- *Division* means the Occupational Health and Safety Division of Saskatchewan Labour.
- *Employer* means a person, firm, association, or body that has, in connection with the operation of a place of employment, one or more workers.
- *Employees* include *managers*, *supervisors*, and *workers.*
- *Equipment* means any mechanical or non-mechanical article or device, including any machine, tool, appliance, apparatus, implement, service or utility, but not including the personal property owned by an individual unless that property is used in the carrying on of an occupation.
- *Hazard* means any activity, situation or substance that can cause harm. Occupational hazards are divided into two broad categories: (1) health hazards, and (2) safety hazards. Generally, health hazards cause occupational illnesses, such as noise induced hearing loss (NIHL). Safety hazards cause immediate physical harm, such as cuts, broken bones, and so forth. Hazards exist in all workplaces.

Definitions (continued)

- *Incident* can mean an *accident*, *dangerous occurrence*, or other mishap.
- *Inspection* means an examination of a workplace, selected work area, or particular hazards, machinery, tools, equipment, and work practices and a comparison of what is found against applicable standards and best practices.
- *Owner* includes:
  - a trustee, receiver, mortgagee in possession, tenant, lessee or occupier of any lands or premises used or to be used as a place of employment; and
  - any person who acts for or on behalf of a person mentioned above as that person's agent or delegate.

  If you own any *plant* used for the work, you become an *owner*.
- *Plant* means any premises, site, land, mine, water, structure, fixture, or *equipment* employed or used in the carrying on of an occupation.
- *Regulations* (or *regs*) means *The Occupational Health and Safety Regulations, 1996.*
- *Representative* (or *rep*) means a worker occupational health and safety representative required by the Act and regulations.
- *Self-employed person* means someone who is engaged in an occupation but is not an employee. Examples can include self-employed trades people and consultants under contract.
- *Supervisor* means anyone given authority over other workers by the employer.
- *Supplier* means someone who supplies, sells, leases, distributes, or installs any biological substance, or chemical substance, or any *plant* used at a place of employment.
- *WCB* means the Saskatchewan Workers' Compensation Board.

Notes

Introduction

An accident is any unplanned event that causes, or may cause, injury or damage. Accidents are often a warning that the workplace's health and safety system isn't working properly.

Experience suggests that effective accident investigations prevent recurrences and make the workplace safer and healthier. That is why *The Occupational Health and Safety Act* and *The Occupational Health and Safety Regulations* require that certain accidents and dangerous occurrences be investigated and that the report contain specific information. Leading employers investigate any incident that causes, or could have caused, injury or loss.

Worker involvement helps make most investigations more effective. The legislation therefore specifies how the workplace's occupational health committee, or worker occupational health and safety representative, must be involved.

What this guide is about

This booklet is not a detailed description of the legislation. Terms used, such as "work together" or "should" do not necessarily mean that there is a legal requirement for the employer, committee, or representative to do everything discussed.

This guide is written for:

- occupational health committee co-chairpersons and members
- worker occupational health and safety representatives
- employers, managers, and supervisors
- accident investigators (such as health and safety professionals)

It will help you to investigate workplace accidents, find the causes, and prevent a recurrence. We will discuss how to:

- collect evidence
- analyze the evidence
- write the report
- take action

Committees can use many of the principles and procedures discussed to investigate other issues, such as refusals to work under section 23 of the Act.

The role of the employer

The employer is ultimately responsible for the effectiveness of incident investigations. To make incident investigations more effective, the employer can integrate them into the organization's health and safety system (emergency planning and so forth), and provide the investigation team with appropriate training and resources. For more information about how to do this, read the Occupational Health and Safety Division's publication *Setting Up An Occupational Health and Safety Program: A Guide*.

Incident investigations should not be blame-fixing exercises. Simply blaming the worker, supervisor, or employer won't produce results. Each incident usually has several contributing factors, not all of which are immediately obvious. Investigators must look for the deeper causes and not simply record events. These deeper causes must be corrected to ensure the effectiveness of the organization's health and safety system.

The role of investigations conducted by committees and representatives

Investigations conducted by occupational health committee members, or the worker occupational health and safety representative and the employer, should:

- find and help correct root causes
- check the employer's health and safety management systems and suggest improvements (where required)
- not assess blame

The committee or representative has no authority to implement corrective action. That is the employer's job. The role of the committee or representative is to advise and recommend.

The employer may ask a specialist for help in the investigation. Examples include insurance companies, health and safety professionals, and technical specialists. Where this is done, the employer is expected to involve the committee or representative, provide them with a copy of related reports, and discuss their concerns. The committee, or the representative and employer, may conduct additional investigations.

How to use this guide

Review the table of contents and *Definitions*. Identify interesting material. Skim the headings of each chapter to find what you are looking for. Refer to applicable legislation as required. Go over the material until you are satisfied that you understand it. Adapt it to your needs.

Read **Part I** to learn what employers, committees, and representatives **must** do to meet the requirements of the legislation.

Read **Part II** to learn advanced techniques that can help you comply. Use as much of the information as you need to conduct a meaningful investigation. Employers and health and safety specialists can use this section to improve their investigations. Committees and representatives can use it to check the effectiveness of the employer's investigation system.

Use the **Appendix** for resource information.

Remember that sometimes you wear two hats

Workers and managers/supervisors sit on occupational health committees. In some organizations, the employer/owner is the employer co-chairperson. Members have many roles. They work together to identify and help resolve health and safety concerns. They identify defects in such things as equipment, tools, machinery, work practices, and work area design. They discuss possible corrective action and make recommendations to the employer.

However, the managers on the committee are often responsible for taking corrective action recommended by the committee. Worker committee members may actually implement the recommendations.

Read this book with these points in mind. Consider the "hats" you wear in the committee and outside it. Think about how you are going to make the material here work for you. What is practical? What is realistic? What ideas can you use to make your workplace healthier and safer?

Notes

Part I

Accidents and dangerous occurrences investigated by committees and representatives

Notes

Accidents and dangerous occurrences investigated by committees and representatives

- What accidents and dangerous occurrences must be reported to the Occupational Health and Safety Division?
- What must be in the notices sent to the Division?
- What must be investigated and reported, and by whom?
- What else must be investigated?'
- What information must be in regulation 29 and 31 reports?

Introduction

This Part describes how to comply with regulations 29, 30, and 31. See Part II for advanced investigation techniques that may help you to comply.

Remember that the employer is responsible for correcting problems identified by the occupational committee or worker health and safety representative. When a committee or representative reports an unsafe condition or a contravention of the legislation, the employer must:

- protect the health and safety of workers at risk until the unsafe condition or hazard is corrected
- correct the problem
- inform workers and the committee or representative about the corrective action taken or planned

If the employer does not agree with recommendations made by the committee or representative, the employer must give the committee or representative a written reason for not resolving the problem or addressing the concern. The committee or representative may contact the Occupational Health and Safety Division for assistance and advice (see section 21 of the Act and regulation 28).

Experience suggests weaknesses in the workplace's health and safety management system are the underlying/root causes for many accidents. That is why it is as important to examine and correct system defects as it is to control hazards.

What accidents and dangerous occurrences must be reported to the Occupational Health and Safety Division?

Accidents causing serious bodily injury (regulation 8)	*Dangerous occurrences (regulation 9)*
8(1) An employer or contractor shall give notice to the division as soon as is reasonably possible of every accident at a place of employment that: (a) causes or may cause the death of a worker; or (b) will require a worker to be admitted to a hospital as an in-patient for a period of 72 hours or more.	**9(1)** In this section, "dangerous occurrence" means any occurrence that does not result in, but could have resulted in, a condition or circumstance set out in subsection 8(1), and includes: (a) the structural failure or collapse of: (i) a structure, scaffold, temporary falsework or concrete formwork; or (ii) all or any part of an excavated shaft, tunnel, caisson, coffer dam, trench or excavation; (b) the failure of a crane or hoist or the overturning of a crane or unit of powered mobile equipment; (c) an accidental contact with an energized electrical conductor; (d) the bursting of a grinding wheel; (e) an uncontrolled spill or escape of a toxic, corrosive or explosive substance; (f) a premature detonation or accidental detonation of explosives; (g) the failure of an elevated or suspended platform; and (h) the failure of an atmosphere-supplying respirator. **(2)** An employer, contractor or owner shall give notice to the division as soon as is reasonably possible of any dangerous occurrence that takes place at a place of employment, whether or not a worker sustains injury.

Regulation 8 deals only with incidents that cause injury. The Division recommends that employers, contractors, and owners report any incident requiring a worker to receive emergency medical attention in a hospital if the employer:

- knows or believes that the incident will cause the worker to be hospitalized for 72 hours or more; or
- is not notified the day after the incident that the worker will be discharged from hospital before the 72 hour period is up.

Regulation 9 discusses incidents that could have hurt someone, but did not (so called "near misses"). Dangerous occurrences have the following characteristics:

1 **They are incidents and not conditions.** For example, a crane being overloaded is not a dangerous occurrence, it is a condition.

However, the condition becomes a dangerous occurrence if the crane overturns.

2 **They could have hurt someone if circumstances had been slightly different.** This means that the factors (forces, chemicals, biohazards and so forth) involved in an incident were powerful enough to cause serious harm, but for luck.

3 **They are listed in regulation 9(1)(a-h).** Remember, however, that regulation 9 does not list every dangerous occurrence that must be reported, it only provides examples.

Here are some examples of dangerous occurrences:

1 An atmosphere-supplying respirator has not been properly maintained. A worker using it is nearly overcome by poison gas.

2 A partially cut tree in a logging area is left standing. It falls while workers are out of the area. Workers could have been struck had they been working there.

3 A partially completed masonry wall is blown over during the night. If the wall had collapsed during the day, workers would almost certainly have been injured.

Incidents do not need to be reported to the Division as dangerous occurrences if the employer can conclude that they posed no risk or occurred in an area where workers are never allowed or permitted to work in.

What must be in the notices sent to the Division?

Accidents causing serious bodily injury (regulation 8)	***Dangerous occurrences (regulation 9)***
(2) The notice required by subsection (1) must include:	**(3)** A notice required by subsection (2) must include:
(a) the name of each injured or deceased worker;	(a) the name of each employer, contractor and owner at the place of employment;
(b) the name of the employer of each injured or deceased worker;	(b) the date, time and location of the dangerous occurrence;
(c) the date, time and location of the accident;	(c) the circumstances related to the dangerous occurrence; and
(d) the circumstances related to the accident;	(d) the name, telephone number and fax number of the employer, contractor or owner or a person designated by the employer, contractor or owner to be contacted for additional information.
(e) the apparent injuries; and	**(4)** An employer, contractor or owner shall provide each co-chairperson or the representative with a copy of the notice required by subsection (2).
(f) the name, telephone number and fax number of the employer or contractor or a person designated by the employer or contractor to be contacted for additional information.	
(3) An employer or contractor shall provide each co-chairperson or the representative with a copy of the notice required by subsection (1).	

What must be investigated and reported, and by whom?

Investigation of certain accidents (regulations 29 and 30)	*Investigation of dangerous occurrences (regulation 31)*
29(1) Subject to section 30, an employer shall ensure that every accident that causes or may cause the death of a worker or that requires a worker to be admitted to a hospital as an in-patient for a period of 24 hours or more is investigated as soon as is reasonably possible by: (a) the co-chairpersons or their designates; (b) the employer and the representative; or (c) where there is no committee or representative, the employer. **(2)** After the investigation of an accident, an employer, in consultation with the co-chairpersons or their designates, or with the representative, shall prepare a written report that includes: (a) a description of the accident; (b) any graphics, photographs or other evidence that may assist in determining the cause or causes of the accident; (c) an explanation of the cause or causes of the accident; (d) the immediate corrective action taken; and (e) any long-term action that will be taken to prevent the occurrence of a similar accident or the reasons for not taking action. **Prohibition re scene of accident** **30(1)** Unless expressly authorized by statute or by subsection (2), no person shall, except for the purpose of saving life or relieving human suffering, interfere with, destroy, carry away or alter the position of any wreckage, article, document or thing at the scene of or connected with an accident causing a death until an officer has completed an investigation of the circumstances surrounding the accident. **(2)** Where an accident causing a death occurs and an officer is not able to complete an investigation of the circumstances surrounding the accident, an officer may, unless prohibited by statute, grant permission to move the wreckage, articles and things at the scene or connected with the accident to any extent that may be necessary to allow the work to proceed, if: (a) graphics, photographs or other evidence showing details at the scene of the accident are made before the officer grants permission; and (b) the co-chairpersons of a committee or the representative for the place of employment at which the accident occurred or their designates have inspected the site of the accident and agreed that the wreckage, article or thing may be moved.	**31(1)** An employer, contractor or owner shall ensure that every dangerous occurrence described in subsection 9(1) is investigated as soon as is reasonably possible by: (a) the co-chairpersons or their designates; (b) the employer, contractor or owner and the representative; or (c) where there is no committee or representative, the employer, contractor or owner. **(2)** After the investigation of a dangerous occurrence, an employer, contractor or owner, in consultation with the co-chairpersons or their designates or with the representative, shall prepare a written report that includes: (a) a description of the dangerous occurrence; (b) any graphics, photographs or other evidence that may assist in determining the cause or causes of the dangerous occurrence; (c) an explanation of the cause or causes of the dangerous occurrence; (d) the immediate corrective action taken; and (e) any long-term action that will be taken to prevent the occurrence of a similar dangerous occurrence or the reasons for not taking action.

What else must be investigated?

- *"Expose" means harmful contact through inhalation, ingestion, or absorption through the skin.*
- *"Infectious material or organism" means an infectious material or organism set out in Table 14 of the Appendix to the regulations.*

Exposures to infectious materials or organisms – Regulation 85 requires the employer to arrange for the investigation and documentation of work-related/accidental exposures to materials or organisms listed in Table 14 of the regulations (such as Hepatitis and Tetanus). This is part of a plan for hazard identification, and risk assessment, management, and communication for infectious material and organisms. The committee must be consulted about the development and review of the plan.

The employer must provide the committee with a summary of the investigation report, as required by regulation 32. The committee may not access confidential medical information.

Exposures to listed substances or organisms – Regulation 311 requires the employer, in consultation with the committee, to investigate exposures resulting from accumulations, spills, or leaks of substances or organisms listed in tables 19 or 20 of the regulations. These include very dangerous materials — such as asbestos and mustard gas (many are known or suspected carcinogens or reproductive hazards). The regulation states what to include in the investigation reports.

Potentially harmful injuries, illnesses, and conditions – The employer should also develop a plan for the investigation of injuries, illnesses, and conditions that do not require hospitalization. Examples include chronic illnesses, musculoskeletal injuries, and the effects of exposures to chemical, physical, or biological substances.

What information must be in regulation 29 and 31 reports?

The report must provide the following information.

Describe the accident or dangerous occurrence

State what you know about the incident. If workers were injured, describe who was injured and how seriously. Describe:

- what happened immediately before the accident or dangerous occurrence (including factors that set the stage, such as work done on the previous shift)
- what happened during the accident or dangerous occurrence
- what happened immediately afterwards (including what happened during the emergency response)

Include any graphics, photographs, or other evidence that may assist in determining the causes

Graphics can include:

- maps
- drawings
- sketches

Other evidence can include:

- witness statements
- equipment manuals, policies, work procedures, and so forth
- material safety data sheets (MSDSs)

Making maps, sketches, and drawings

Use maps to get a "birds-eye view" of the accident scene, locate the positions of equipment, tools, debris, workers, and so forth. Make your maps, sketches, and photographs, as soon as you can after you get initial statements from witnesses at the site.

Taking photographs

If you use photographs, start with shots of the general scene. Then shoot each important piece of evidence from several different directions to provide detailed information. Move the camera, but not the item that you are photographing. (If you move the item, this may complicate subsequent examinations by specialists.)

Select a way of clearly indicating distance, direction, and perspective in your shots, (for example, include rulers and direction indicators).

Using other evidence, (such as witness statements)[1]

Witness interviews may be needed to find the causes of the incident and how to prevent a recurrence. The regulations do not require witnesses to be interviewed in every investigation. However, the Division recommends that interviews be conducted whenever they are needed to identify causes and suggest corrective action. Interviewers should be experienced. They may or may not be on the workplace's occupational health committee.

Explain the direct, indirect, and root causes

1 **The direct cause** (what directly led to the incident, such as an unsafe work practice, an equipment failure, and so forth). This will often be an unsafe act or condition. Separate facts from theory and opinion as much as possible. Avoid jumping to conclusions and continue looking for any underlying causes.

2 **The indirect causes** (working conditions that set the stage, such as inadequate training, procedures, failure to prevent departures from established procedures, and so forth).

3 **The root causes** (fundamental flaws that ultimately created the conditions in the work environment, such as defects in the health and safety management system, equipment design problems, employee assistance programs, and so forth).

Experience suggests that many accidents and dangerous occurrences result from multiple failures in an organization's health and safety system. In other words, things could be improved at the level of the employer, manager, supervisor, and worker.

---

[1] This section deals with witness interviews. See Part II for a detailed description of how to use documentary evidence, such as equipment manuals, policies, work procedures, MSDSs, and so forth.

State what immediate corrective action was taken

Identify what corrective action the employer took to control the immediate causes of the accident or dangerous occurrence and prevent a reoccurrence. Examples of corrective action could include:

- repairing or replacing defective tools, equipment, or machinery
- changing a work procedure
- increasing supervision and training

State any long-term action that will be taken to prevent a reoccurrence

Long-term action should correct the root cause. Examples could include:

- eliminating a hazard
- controlling a hazard at its source (such as by using engineering controls or redesigning equipment)
- controlling a hazard along the path to the worker by using barriers, containment, better ventilation, and so forth
- more frequent monitoring, more inspections, maintenance, or other administrative actions

Conducting an investigation

To investigate an accident, dangerous occurrence, or refusal you need to:

1 Find out what caused the incident (immediate events leading up to the incident).

2 Find out what contributed to the incident (such as unsafe activities and conditions).

3 Find out what root causes set the stage (such as defective safety policies, procedures, or attitudes).

4 Find ways to prevent a similar incident.

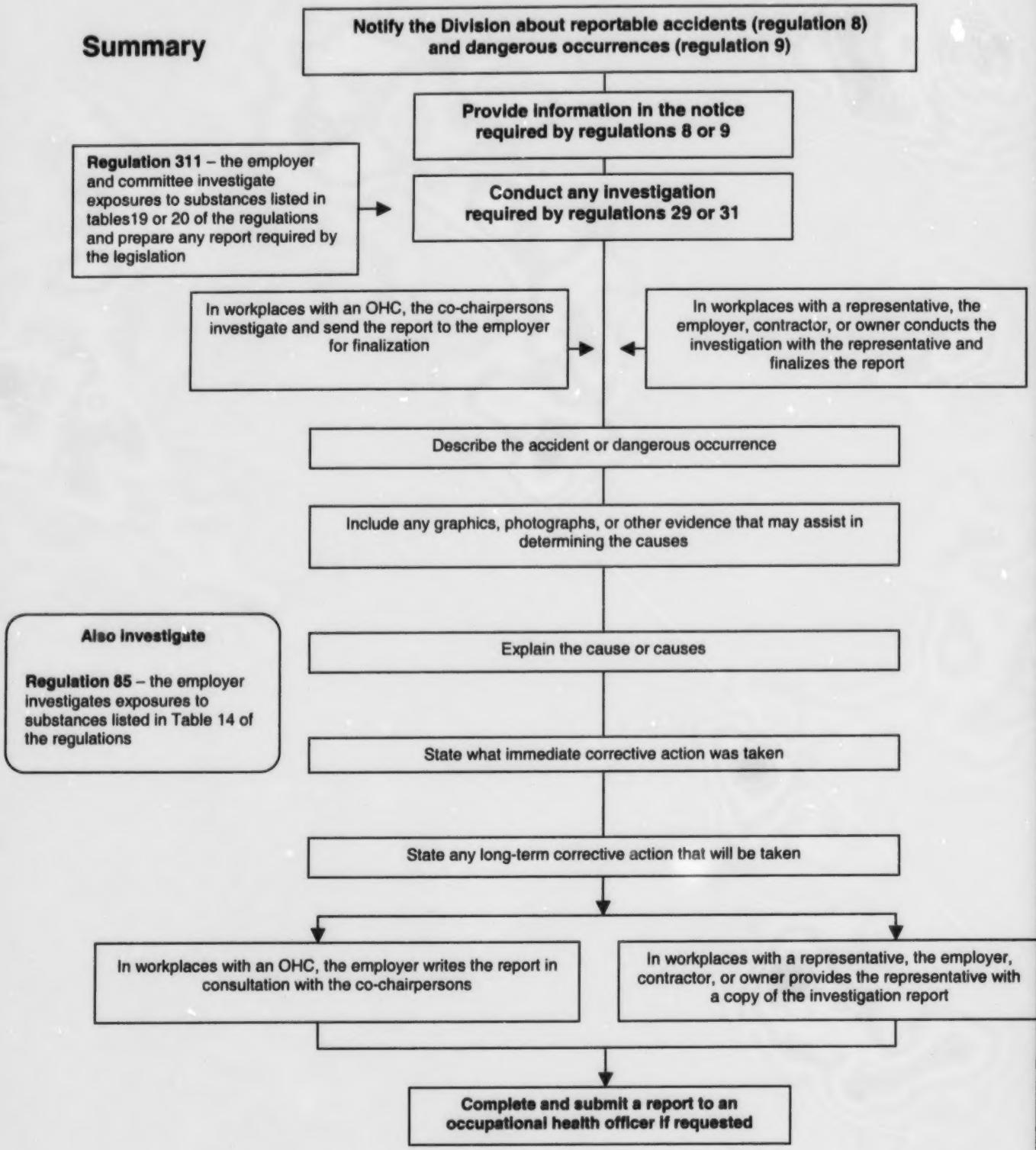
Don't let evidence be disturbed. If necessary, take photographs of the incident scene or make drawings. Interview anyone who saw the incident or was involved. Use the W5 method; ask:

- WHO was involved?
- WHERE did the incident happen?
- WHEN did it happen?
- WHAT were the immediate causes?
- WHY did the incident happen (root cause)?
- HOW can a similar incident be prevented?

Factors to think about might include:

- inadequate planning, training, orientation, or supervision
- poorly designed work areas or job procedures
- inadequate, defective, or obsolete tools, machinery, and equipment
- unusual circumstances (such as an emergency that requires workers to perform jobs they normally don't do)
- rarely performed jobs

Summary


Notify the Division about reportable accidents (regulation 8) and dangerous occurrences (regulation 9)
Provide information in the notice required by regulations 8 or 9
Regulation 311 – the employer and committee investigate exposures to substances listed in tables19 or 20 of the regulations and prepare any report required by the legislation
Conduct any investigation required by regulations 29 or 31
In workplaces with an OHC, the co-chairpersons investigate and send the report to the employer for finalization
In workplaces with a representative, the employer, contractor, or owner conducts the investigation with the representative and finalizes the report
Describe the accident or dangerous occurrence
Include any graphics, photographs, or other evidence that may assist in determining the causes
Also investigate
Regulation 85 – the employer investigates exposures to substances listed in Table 14 of the regulations
Explain the cause or causes
State what immediate corrective action was taken
State any long-term corrective action that will be taken
In workplaces with an OHC, the employer writes the report in consultation with the co-chairpersons
In workplaces with a representative, the employer, contractor, or owner provides the representative with a copy of the investigation report
Complete and submit a report to an occupational health officer if requested

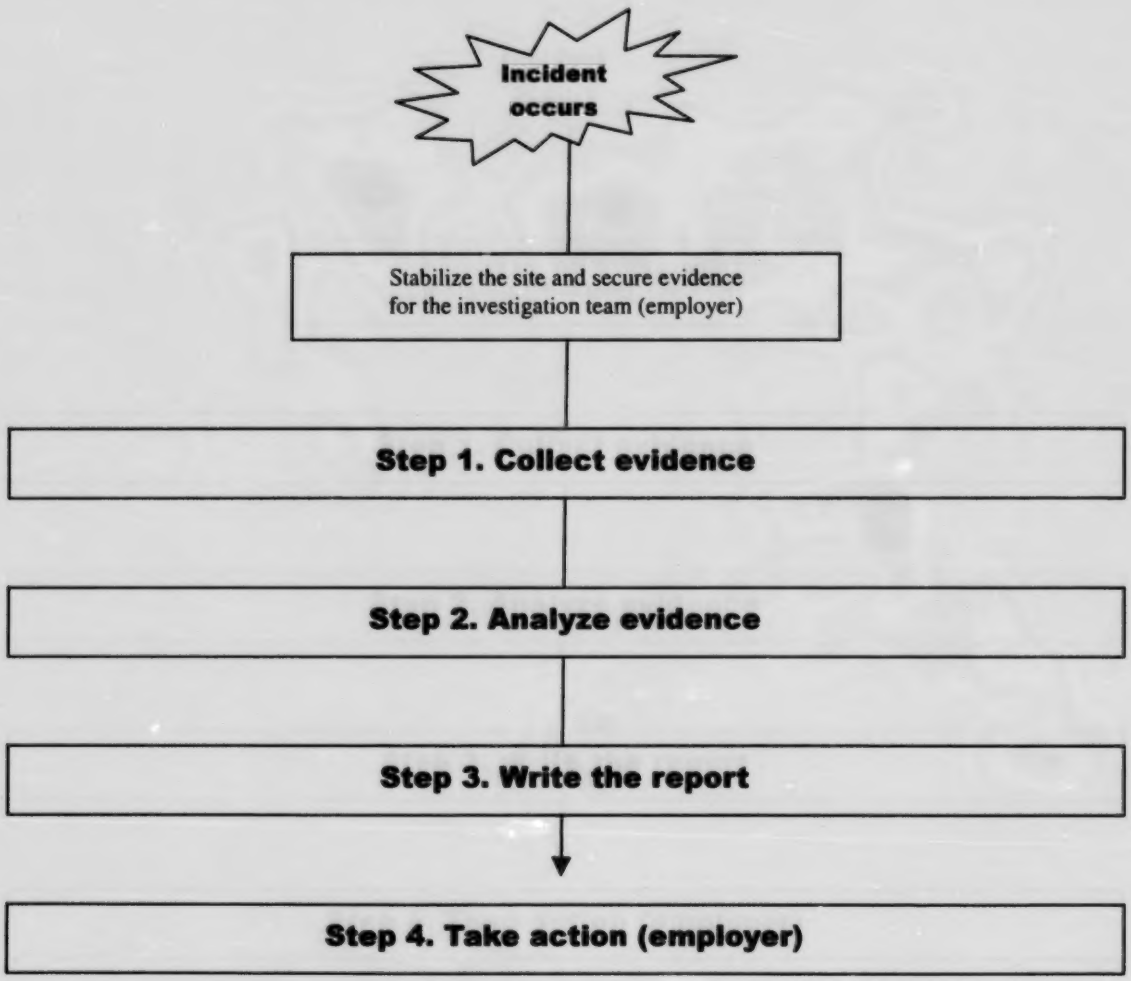
Part II

Advanced investigation techniques

This section deals with advanced investigation techniques. Employers and specialists can use this information to improve their investigations. Committees and representatives can use it to check the effectiveness of the employer's investigations.

We have organized the steps in conducting an investigation one after another. In reality, many of these steps are carried out at the same time. For example, you may begin interviewing witnesses while you are still collecting physical evidence.

Summary of the investigation process


Incident occurs
Stabilize the site and secure evidence for the investigation team (employer)
Step 1. Collect evidence
Step 2. Analyze evidence
Step 3. Write the report
Step 4. Take action (employer)

Collect evidence

- Identify, collect, label, and verify physical evidence
- Collect documentary evidence
- Interview witnesses

Introduction

When an incident happens, the employer's emergency response system should stabilize the scene and make it safe for the investigation team. Usually the supervisor collects initial evidence, such as the names of witnesses, and briefs the team about what happened.

An incident investigation essentially involves collecting and analyzing information. Your analysis (what caused the incident and how can another be prevented?) depends on how well you collect information from:

1 **Physical evidence**, such as the positions of incident debris, broken parts, skid marks, and the type of damage done to tools, machinery, and equipment.

2 **Documents,** such as equipment manuals, material safety data sheets, (MSDSs) work procedures, computer files, and legislation.

3 **Witnesses,** such as those who saw the incident, were first on the scene, and specialists familiar with the technology and work practices associated with the incident. Other witnesses include workers and supervisors working on shifts before the incident and those working in nearby areas.

Collecting information can be difficult and time consuming. Physical evidence may be damaged, lost, or lacking. Relevant documents may not exist, be out of print, or inaccessible. Witness statements can be contradictory or sketchy. Each new piece of information may generate more work. For example, interviews may suggest that certain documents be read. Physical evidence may indicate that more witness interviews are needed, and so forth. Hard, persistent, and painstaking work may be required to find out what really happened — and what can be done about it.

Identify, collect, label, and verify physical evidence

Identifying, collecting, labeling, verifying, and storing evidence is one of the first things that the investigation team does when it reaches the scene. Here are some general guidelines for dealing with evidence.

1 Take appropriate safety precautions when dealing with evidence. For example, there may be leaks of flammable or poisonous substances, unstable structures to deal with, and so forth.

2 Systematically identify, collect, verify, record, store, and analyze physical evidence to help find out what caused the incident.

3 If possible, do not remove evidence until witnesses have been interviewed. An intact incident scene sometimes helps witnesses to remember events more clearly.

4 When appropriate, mark the locations of evidence you have removed with spray paint, tape, or chalk. This may help you if the incident scene has to be looked at again later.

The following table illustrates some examples of the types of evidence your team may have to deal with. Take appropriate health and safety precautions when dealing with each type.

Examples of Types of Evidence	
Type of evidence	***Examples of possible use***
Objects • Tools, equipment, and materials (including damaged clothing and personal protective equipment) • Hardware • Facilities • Debris • Skid marks, patterns, and other properties of items associated with the incident	• This type of evidence can tell you much about what actually went wrong and why
Chemicals • Fluids and liquids • Gasses, smoke, and fumes • Solids (pellets, dusts, powders, and so on) • Containers of chemical substances	• Hydraulic fluids and liquids can tell you a great deal about the operability of machinery, mobile equipment, and vehicles • Noxious gasses, smoke, and fumes can tell you a lot about hazards in the work area, work practices, the adequacy of engineering controls, and so forth
Biological substances • Blood, body fluids, and so on • Potentially contaminated food and drink • Plants, spores, and pollens • Insects and other animals	• This type of evidence can tell you a great deal about what caused harm and how the harm was done

Documenting physical evidence

Use a log form to document and track each piece of evidence as it is collected. See the *Accident Investigation Physical Evidence Log Form* in the Appendix for an example. You can also take notes and photographs, use videotape, make sketches, and draw maps. See the accident investigation *Photographic Log Sheet Form, Site Sketch Form,* and the *Sketch of Photography Locations and Orientation Form* in the Appendix for examples.

Making maps, sketches, and drawings

Maps, sketches, and drawings can come in handy if the site is disturbed, or equipment is moved before the investigation is finished. Use maps to get a "birds-eye view" of the incident scene, locate the positions of equipment, tools, debris, workers, and so forth. Use scale drawings and maps to test theories about what caused the incident.

Obtain maps or drawings of the plant or work site. The incident investigation team can make more detailed maps and drawings during its investigation. Make maps and sketches, and take photographs as soon as you get initial statements from witnesses at the site.

Taking photographs and using video

Consider hiring professionals for complex photographic or video work. Inadequate photography can lead to incorrect conclusions and ineffective corrective action.

Use photographs (standard or computer cameras) and video to record information, especially information that cannot be collected in other ways. A thorough and complete video can reduce the number of trips you have to make to the incident site. Use video to cover the overall incident scene, as well as important locations and items.

Have an investigation team member direct the photographer to ensure that everything of importance is recorded. Move from general to specific shots. Start with shots of the general scene. Shoot each key item from several different directions to provide better information. Move the camera, but not the item that you are photographing. (Moving an item may complicate subsequent examinations by specialists.)

Select some way of clearly indicating distance, direction, and perspective in your shots, such as including rulers and direction indicators.

Many cameras can print the date and time on each negative or slide. In some cases, this can be useful. In other instances, this feature can obscure evidence. If so, use a written log instead (see the *Accident Investigation Photographic Log Sheet Form* in the Appendix) to track each shot. Include the scene, subject, date, time, direction, and the orientation (vertical or horizontal) of each photograph in the log. Consider putting digital or scanned photographs in your report to illustrate key conclusions and recommendations.

Inspecting physical evidence

Once evidence is collected, mapped, and photographed, it can be examined. Here is what to do:

- Check equipment, tools, and facilities, and so forth for signs of tool, machine, and equipment failure, breakage, abuse, misuse, inadequate maintenance, or non-use. See if key parts were missing, broken, or out of place before the incident.
- Check safety devices (guards, interlocks, and so on) and control indicators (dials, readouts, instruments, position indicators, and so forth) to see if they were working properly.
- Check damage and wear patterns, skid marks, the direction of debris, and so forth to gather information about what happened before, during, and after the incident.

For complex examinations, think about developing a checklist for equipment likely to be involved in an incident, or reviewing electrical schematics, plans, and so on. Put these checklists and schematics into the investigation kits.

Don't rely on your memory. Make notes, maps, and drawings. Take photographs and use video. Use rulers and tape measures.

Removing and storing physical evidence

Sometimes physical evidence must be removed, cleaned, and tested to find out more about what caused the incident. For example, biological samples or broken machinery parts may have to be sent to a lab for examination. If you will be removing, storing, or testing physical evidence, you will need a system to keep track of it and prevent "contamination". The complexity of your system depends on your needs.

In complex investigations, you may need to:

Prepare "clean" and clearly identified sample containers. Keep them in the investigation kit for ready access.

1 Carefully note who removes each piece of evidence and how.

2 Carefully label each sample and the container into which it is put. Make sure delicate or broken items are carefully packaged and protected. Tag or otherwise identify samples that cannot be put in a container or bagged.

3 Map and take photographs of each piece of evidence before it is removed. If a piece of evidence must be taken out of a tool, machine, or structure, photograph each stage of the disassembly. Note any damage to each piece of evidence. Photograph each item before and after cleaning.

4 Log when and where each item (or document) was found (date, time, and location), is stored, and who has access to it, (when, and for how long). If necessary, assign a specific person to control logs and ensure evidence is signed out by the person using it. Restrict access to sensitive evidence.

Always use safe work procedures to handle hazardous products (such as biohazards) and incident debris (such as sharp or heavy objects).

Collect documentary evidence

Documentary evidence can include:

- work procedures and shift records
- maintenance files and inspection reports
- worker concerns and occupational health committee minutes
- policies, procedures, plans, programs, and specifications
- orientation and training records
- legislation and industry standards for the work performed
- computer files, photographs, video, diagrams, and drawings
- investigation reports dealing with similar incidents

Documentary evidence is just as important as physical evidence. It can tell you what should have happened. Equipment readouts and other documents may even report *what actually happened* during some phases of the incident. The reasons for the difference between *what should have happened* and *what actually happened* are usually the causes of the incident.

Use the information you get from documentary evidence to help you:

- identify which witnesses to interview and questions to ask
- check statements given by witnesses
- monitor the effectiveness of the employer's health and safety management system

Interview witnesses

Much of the critical information in the investigation may be discovered through interviews. Effective witness interviews are therefore crucial. We suggest that you plan interviews carefully and use experienced interviewers.

Limitations

Witness recollections are notoriously unstable. That is why it is very important to interview witnesses within 24 hours (whenever possible) of the incident while their memories are still fresh. Prompt interviews help keep information reliable, detailed, and accurate.

If possible, keep witnesses from talking with each other about the incident before they are interviewed. This avoids 'contamination of information'.

Contradictions and conflicts in witness statements are normal. People interpret information differently. The same events seen from different angles and distances may look different.

Planning interviews

We suggest that your incident investigation team put some thought into how it will conduct its interviews. Ideally, your incident investigation system should provide some written guidelines. (See the *Accident Investigation Witness Interview Form* in the Appendix.) Here are some suggestions.

1 **Get as much information as you can**. Talk to people who have information that can help. Review documents and physical evidence. Get a general understanding of the events of the incident, who was involved, and where each witness was when it happened. Avoid forming any conclusions at this point if you can. Don't go into the interview with preconceived ideas.

2 **Make sketches and diagrams during your initial visit to the incident site.** Use them when planning your interviews to pinpoint where each witness was before, during, and after the incident. Be sure to map out the locations of equipment, machinery, and so on. Use sketches and diagrams during the interview to clarify issues and refresh each witness' memory.

3 **Identify all witnesses** you want to interview. Ideally, the first supervisor on the incident scene will have made a list of witnesses and obtained initial statements from them.

4 **Decide who will conduct each interview.** Experience suggests that it is best to have one experienced, credible, person do all the interviews. This provides greater consistency, depth, and focus. If more than one team member (such as committee co-chairpersons) will be conducting interviews, make sure they are consistent in their approach and in the questions that they ask.

5 **Discuss what you want each interview to accomplish.** Determine what information each witness may be able to provide. Think about how you can get the most useful information. Set goals for each interview and list the topics you will cover. You might find it helpful to make a table showing:

- each witness's name, job title, and phone number
- a list of questions you want answered
- a summary of each witness' initial statement and where he or she was during the incident

6 **Develop a standard set of interview questions.** Use these questions to check the reliability of each witness. Make a table to help you compare the answers from each witness to your standard questions. (See the questions listed in the *Accident Investigation Witness Interview Form* in the Appendix for suggestions.)

7 **Agree on how records will be made.** Are you going to take notes, or use a tape recorder? If so, will you need a secretary to produce a transcript? Do you want to take written witness statements? The employer can provide secretarial and other administrative support.

8 **Schedule interviews.** Find out when each witness can be interviewed. Find a *neutral* place where interviews can be held in private and without interruptions. Small meeting or conference rooms often work well.

9 **Be prepared to interview each witness more than once**. Be prepared to conduct initial interviews to gather general information and subsequent interviews to clarify important points.

Sequencing

1 **Interview those involved first.** Start by separately interviewing those witnesses who were involved in the incident, saw it, or were the first on the scene. For example, interview the incident victim(s), the supervisor who gave instructions to the worker(s), and the supervisor, workers, and first aid responders who were first on the scene after the incident. If you don't interview these people within 24 hours of the event, they may forget important details.

2 **Next, interview those who know something about what was going on before the incident.** For example, interview the supervisor of the previous shift and the workers who were using the equipment or performing the job involved in the incident. Find out if supervisors and workers in nearby areas have anything to contribute.

3 **Finally, interview technical specialists who are familiar with the technology and work practices involved.** For example, interview supplier representatives about the hazards of the equipment, chemicals, or safe work practices associated with the job.

Conducting interviews

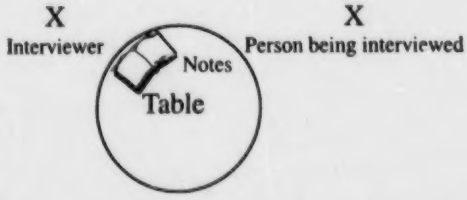
There are many ways of conducting an interview. The format discussed here has proven to be successful under a variety of conditions.

Setting the tone

An incident investigation interview is not an interrogation. Incident investigations should find facts and not fix blame. Here are some tips for creating a productive environment for your interviews.

Treat everyone with courtesy and respect. Be sensitive to the emotional condition of each witness.

Create an informal environment. Don't put barriers between you and the person being interviewed. Sit on the same side of the table.



Reassure each witness. Make sure each witness knows why he or she is being interviewed and what the interview is about. Some witnesses may think that the *real* purpose of the interview is to find out *who should be punished*. Make it clear that the purpose of the interview is to find what caused the incident and not to conduct a 'witch hunt'. Put each witness at ease. Start with questions that are easy to answer.

Don't rush. Tell witnesses they can help prevent another incident by sharing what they know. Tell witnesses if they will be asked to come for follow-up interviews and when. Encourage them to contact you if they have any questions or remember something new.

Assessing each witness

During each interview, think about:

Time – How much time has passed since the incident? People often forget from 50 to 80 percent of the details within 24 hours of an incident.

Contamination – Have witnesses been in contact with each other? When witnesses talk about what they *saw* during the incident, their statements tend to become *the same*.

Signs of stress, illness, shock, or amnesia resulting from the trauma of the incident – Remember that physical or mental health can affect the accuracy of a statement. Unpleasant events are often forgotten. Stress can distort events and reduce the reliability of testimony. Injured or emotionally affected witnesses may have little or no memory of events. Some need time to recover before being interviewed.

To evaluate reliability during the interview, use *questions of fact* (questions that you already know the answers to — such as when and where the incident happened and who was involved). After the interview, compare the answers of witnesses to the standard questions you prepared beforehand.

Using effective information gathering techniques

1 **Start by gathering basic information from each witness.** Ask general questions first and then, go into detail to *flush out* the information. At the end of the interview, read the final statement of each witness back to him or her (or summarize what the witness told you if you aren't going to use written statements). Clear up uncertainties. Be an active listener. Keep an open mind.

2 **Next, ask each witness to describe how he or she became aware of the incident (when did you find out about the incident and how?)** For example, a witness may have heard a loud noise or seen something wrong immediately before the incident. Information like this might help discover why the mishap happened.

3 **Then, ask each person to describe what he or she heard, felt, and did before, during, and immediately after the incident.** Let the witness explain events in their own words. Give each witness all the time they need to tell you what they saw and how they feel.

Sample format for asking questions

1 **Ask a specific question**, for example: "What time did you arrive at the scene of the accident?"

2 **Then ask a clarifying question**, such as: "Who else was there?"

3 **Pause** for a few moments to give the interviewee a chance to remember events and provide additional information.

4 **Then ask an open question**, such as: "Can you describe the position of the damaged tools, equipment, and machinery?"

Examples of types of questions to ask

1 When did you find out about the incident and how?

2 What was the time and place of the incident?

3 Who was involved (supervisors, injured workers, witnesses, first responders, and so forth)?

4 What work was being done before and at the time of the incident?

5 What had the supervisor instructed the workers to do?

6 What supervision and training were provided?

7 What was being used to do the work (tools, equipment, machinery, supplies, chemicals, and so forth)?

8 What was the condition of the work environment before, during, and after the incident (weather, noise, chemical smells, temperature, distractions, and so forth)?

9 What was moved or repositioned after the incident (including casualties)?

10 What tools, equipment, supplies, and people were brought to the incident scene to respond?

11 How did the response and rescue crews perform?

12 How do you think a similar incident could be avoided? (Each person's views about how to prevent the incident may help you develop recommendations for corrective action.)

Keeping the interview on track

Use the goals of your interview and your list of interview questions to keep the interview on track. Ask questions that require specific answers to keep statements from wandering.

Taking interview notes

Make your notes complete, specific, and legible. Keep separate notes for each interview. Use notes to help plan subsequent interviews.

Don't try to take notes and interview at the same time. Have one person take notes and another conduct the interview. If one person is responsible for both, prepare notes immediately after each interview is over.

Concentrate on recording important facts — don't try to record everything.

Using written statements

There is no regulatory requirement for committees, representatives, or employers to take signed written statements during incident investigations. Some committees and representatives prefer to have the employer take written statements.

If you decide to obtain written statements, take them near the end of your investigation after you are satisfied that you know what happened. Review each statement with the person who gave it before it is finalized. Clear up any uncertainties before the statement is signed.

Take written statements only from those who can provide critical information.

What to include in a statement

On the top or bottom of each page of each statement, put the:

- name of the person being interviewed
- page number and the total number of pages in the statement
- date

For example: "Statement of John Smith, page 4 of 5; Given on this date_____".

Doing this can prevent confusion if statements get mixed together or pages become separated.

Identify who conducted the interview on the first page of each statement.

Following-up

Conduct follow-up interviews as new information surfaces.

How to Get The Most Out of Every Interview

Create a relaxed atmosphere

- ✓ **Welcome each witness.** If the witness doesn't know you, introduce yourself and shake hands. Be polite, patient, and friendly. Treat everyone with respect. Put each witness at ease.

Prepare each witness

- ✓ **Tell** each witness that the purpose of the interview is to prevent another incident and not to attach blame.
- ✓ **Explain** that each witness may need to be interviewed more than once as new information emerges.
- ✓ **Remind** each witness that information they provide may have to be disclosed to others in the course of the investigation.
- ✓ **Tell** them how important the information they may be able to provide will be in finding out what happened and preventing a recurrence.

Record information

- ✓ **Tell** each witness how information will be recorded and what will be done with it. If you are going to take written statements, reassure each witness that they will be able to review their statement before it is finalized.
- ✓ If someone else will be recording each statement, rely on that person to provide a detailed account of what was said. Concentrate on noting important points and using them to ask questions and obtain information.

Ask questions

- ✓ **Allow the witness to generalize** — ask each witness to describe what he or she saw in full before you ask detailed questions. Use an opening line such as "Would you please tell me what you saw/did?" Some interviewers have each witness write out a statement immediately before the interview and then use this statement as a basis for their questions. Other interviewers like to have witnesses prepare their statements after the interview has reminded them of the events they saw.
- ✓ **Begin with easy "yes" or "no" type questions**. Then ask the witness to tell you what happened. Once the witness is finished, ask more detailed questions to flush out details.
- ✓ **Keep your questions focused.** Explore unexpected information that comes up, but keep to your interview plan and get the information you planned to obtain. Ask each witness to answer each one of the standard interview questions you prepared before the interview. Use the answers to corroborate information.
- ✓ **Use comparisons and reference points to help each witness answer the questions.** For example: "How did the outdoor temperature at the site compare with today's temperature?" Use drawings, photographs, sketches, and so forth to help witnesses remember.
- ✓ **Ask open-ended questions that cannot be answered with a "yes" or "no"**. Probe for missing information. Ask questions to clarify what other witnesses have said.
- ✓ **Watch for body language**, inflections in the voice, gestures, and so on. Body language may suggest other areas to explore in the interview.
- ✓ **Listen actively**. Give witnesses feedback. Summarize and *feedback* key points of each statement. Keep an open mind. Don't jump to conclusions.

End the interview on a positive note

- ✓ If possible, provide each witness with a written copy of his or her verbal statement. Go over it with them and clear up any misunderstandings. If a copy will not be available until later, make an appointment to review it with the witness. Encourage each witness to contact you if he or she remembers something or has questions. Provide your phone and FAX number(s).
- ✓ Remind every witness that more interviews may be needed later. Thank each for taking the time to talk with you.

What To Avoid During Interviews

- ✓ **Do not rush the witness** while he or she is describing the incident or answering questions. Avoid cutting off anyone's statement.
- ✓ **Do not judge**, display anger, refute someone's statement, threaten, intimidate, or blame a witness.
- ✓ **Do not make promises** you can't keep, such as promising to keep interview material confidential.
- ✓ **Do not antagonize** any witness by using inflammatory words or terms, such as "stupid," "careless," or "not concerned with safety".
- ✓ **Do not omit questions** because you may already know the answer — you may not really know as much as you think.
- ✓ **Do not suggest answers**. For example:
  - "*They didn't use the right work procedure did they?*" (It would be better to ask questions like: "How were they instructed to perform the job? What procedures did they use?")
  - "*Was there a rotten egg smell?*" (It would be better to ask questions like: "Was there a smell? If so, what did it smell like?")

Summary

This step has discussed how to collect evidence. How well you carry this out determines how well you perform the next step — *analyze the evidence.*

Usually the first supervisor on the scene must take command and stabilize the situation. Once this is done, your investigation can begin. Generally, your investigation team will get the information it needs to find the cause of an incident from three sources: physical evidence, documents, and witnesses.

Collect physical evidence – Systematically gather, document, and preserve physical and documentary evidence as quickly as you can. Use a log form (see the example in the Appendix) to document and track each piece of evidence as it is collected. Take notes and photographs, use videotape, makes sketches, and draw maps. Always use safe work procedures to handle hazardous products (such as biohazards) and incident debris (such as sharp or heavy objects).

Collect documents – Documentary evidence is just as important as physical evidence. Documents can tell you what should have happened, and in some cases, what actually happened. The reasons for the difference between *what should have happened* and *what actually happened* are usually the causes of the incident.

Interview witnesses – Identify and interview key witnesses within 24 hours of the incident while memories are still fresh. If possible, keep witnesses from talking with each other about the incident before they are interviewed. This avoids 'contamination of information'.

Start by interviewing witnesses who were involved in the incident, saw it, or were the first on the scene. Next, interview those who know something about what was going on before the incident. Finally, interview technical specialists who are familiar with the technology and work practices involved. For example, interview supplier representatives about the hazards of the equipment, chemicals, or safe work practices associated with the job. Conduct follow-up interviews as new information surfaces. Remember that physical or mental health can affect the accuracy of a statement.

What happens next – Once you have identified, collected, and verified physical evidence, collected documents, and completed witness interviews, you must analyze the evidence to discover what caused the incident. We'll talk about how to do this next.

Notes

Analyze the evidence

- Analyze the incident factors
- Identify the direct cause
- Identify the indirect causes
- Identify the root causes

Introduction

After witness interviews are completed and summarized, examine each statement to determine what facts it reveals about the incident. Verify each "fact" by checking it against the physical and documentary evidence and the statements of witnesses.

As you examine physical and documentary evidence, you may need to conduct follow-up interviews. Unfortunately, the information from follow-up interviews may not be very reliable. Witnesses talk to each other, forget details, and "fill-in the gaps" of their memories.

Organize your facts, then, begin your analysis and find the:

1 **Direct causes** – Determine what directly led to the incident. This will often be an unsafe act or condition. Separate facts from theory and opinion as much as possible. Avoid jumping to conclusions and continue looking for any underlying causes.

2 **Indirect causes** – Next, identify what working conditions that set the stage.

3 **Root causes** – Finally, examine the employer's health and safety system (policies, procedures, plans, employee assistance programs, and so forth) to see if there are any fundamental flaws. Look for interactions across system components.

Analyze the incident factors

*A simple, but effective way of finding the causes for an incident is to keep asking **who, what, where, when,** and **how** for every essential event until you are satisfied that you know **why** the incident happened.*

Go through each event before, during, and immediately after the incident. Ask "why" each happened. Evaluate the role of every factor, including:

- people factors
- material factors
- work environment factors (such as workplace conditions)
- work process factors (such as work flow design)
- health and safety system factors (such as policies, plans, and procedures)

People factors

For example, what was the role of:

- the supervision provided?
- the instructions given at the time of the incident?
- the training and experience of everyone involved?
- personal factors (such as inexperience, illness, medication, stress, and so forth)?

Material factors

For example, what was the role of:

- substances and materials?
- tools, equipment, and machinery?
- personal protective equipment?

Work environment factors

For example, what was the role of the:

- weather conditions (temperature, light, ice, rain, and so forth)?
- work environment (visibility, noise, heat, and so on)?
- time of the day, shift, or week when the incident happened?

Work process factors

For example, what was the role of the design of the:

- job itself (worker selection and orientation, work procedures, ergonomics, and so forth)?
- work area and workflow (production pressures)?
- controls and safety devices on equipment and machinery?

Health and safety system factors

Examine the:

- health and safety system, including programs, policies, procedures, standards, and specifications to find out what created the work environment within which the incident happened
- occupational health committee minutes forms, occupational health officer reports, notices of contravention, inspection reports, and accident records for information about the health of the "safety culture" in the workplace
- any written instructions and work procedures indicating what the employer wanted done at the time of the incident
- operator's manuals and manufacturer's specifications to find out how tools, equipment, materials, and supplies should have been used
- legislation and other standards for information about health and safety precautions that should have been in place

Ask questions like:

- are there clearly measurable performance objectives and accountabilities for health and safety?
- are enough resources allocated to health and safety?
- is adequate training provided to workers and supervisors?

See the Division's publication *Setting Up An Occupational Health and Safety Program: A Guide* for more information on evaluating the health and safety system.

Identify the direct cause

The direct (immediate) cause(s) *usually* precipitates the incident and occur(s) immediately before it.

For example, a large employer asks a newly hired teenager to load and drive a half-ton truck to a storage site through a large, crowded, confusing, industrial yard. On the way, the teenager drives into a hidden sewage lagoon and drowns. The immediate cause was driving into the lagoon.

Identify the indirect causes

Indirect cause(s) set the stage for an incident and can include:

- lack of training and supervision
- inadequate tools, equipment, and materials
- departures from safe work procedures

Try to find out if there were any symptoms of a problem before the incident. If so, why were no concerns expressed? Why did the health and safety system fail?

In our example, the indirect causes could include the following:

- the teenager had not been trained to drive the truck and had never driven in the yard before
- traffic routes and the lagoon were poorly marked
- supervision was inadequate

Identify the root causes

An incident may or may not have one ultimate "root" cause. Examples of root causes might include:

- inexperience (employer/worker)
- inadequate mechanisms to identify and control hazards
- design flaws (job, equipment, tools, installations)

In our example, the company involved in the incident had a health and safety program. However, no one had ever had a traffic incident in the yard. No one considered the hazards of driving near the lagoon. There were no written policies or safety procedures dealing with company vehicles or traffic safety in the yard. Worker orientation did not include vehicle safety or yard hazards.

Review any system interactions

Sometimes one problem leads to others, creating a string of falling dominoes. In other instances, problems randomly interact, creating a unique, incident-producing situation.

Sometimes improving the entire health and safety management system is the best way of preventing recurrences.

In our example, the workplace's committee might recommend these actions:

1 To remove the direct cause:

   a) Ensure that hazards in the company's yards, roadways, and lagoons are promptly identified, the risks of harm assessed, and effective controls put in place

   b) Clean up the yard and ensure roadways are in good condition

   c) Mark the lagoon, and all roadways. Install traffic barriers along the shore of the lagoon

2 To remove the indirect causes:

   a) Ensure company vehicles and driving practices meet appropriate health and safety standards

   b) Ensure workers are informed of hazards in the yard and in operating vehicles and mobile equipment there

   c) Provide inexperienced workers with instruction in how to drive company vehicles, particularly loaded trucks

   d) Ensure inexperienced workers are closely supervised by a competent supervisor

   e) Require workers to use safe driving practices as a condition of employment

3 Correct the root cause by removing weaknesses in the organization's health and safety system:

   a) Identify and take steps to prevent foreseeable incidents

   b) Provide written procedures specifying who can drive company vehicles and what driving rules must be followed in the yard

   c) Improve the system used to provide yard supervision, housekeeping, roadway maintenance, and hazard control

   d) Improve worker orientation and training

If your workplace does not already have an occupational health and safety program, consider using the Division's publication *Elements of an Occupational Health and Safety Program* to help develop one. The program consists of these components:

1 A written policy to demonstrate the employer's commitment.

2 A system to identify and control hazards and emergencies.

3 A system to identify people and resources to respond to emergencies.

4 A statement of responsibilities and accountabilities.

5 A schedule of inspections.

6 A plan to control chemicals and biohazards.

7 A training plan for supervisors and workers.

8 A procedure to investigate accidents, dangerous occurrences, and refusals to work under section 23 of the Act.

9 A strategy to involve workers.

10 A mechanism to regularly evaluate and revise the program.

Summary

After witness interviews are completed and summarized, examine each statement to determine what facts it reveals about the incident. Verify each "fact" by checking it against the physical and documentary evidence and the statements of other witnesses. Then, begin your analysis:

1 Identify the direct cause that precipitated the incident.

2 Identify the indirect causes that set the stage.

3 Identify any weaknesses in the employer's health and safety system (policies, procedures, plans, and so forth) to see if there are any fundamental flaws (root causes).

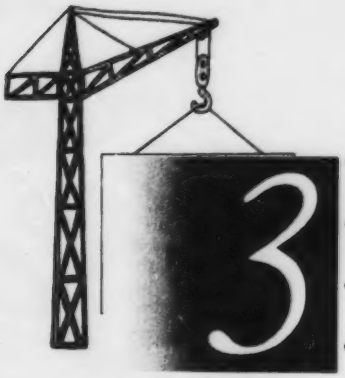
Go through each event before, during, and immediately after the incident. Evaluate the role of every factor, including:

- people factors
- material factors
- work environment factors (such as workplace conditions)
- work process factors (such as work flow design)
- system factors (such as policies, plans and procedures)

Spend time examining the workplace's health and safety management system (programs, policies, procedures, standards, and specifications) to find out what created the work environment within which the incident happened.

Keep asking "why" until you are satisfied you know what caused the incident.

Fixing the entire health and safety management system is often the best way of preventing recurrences.



Write the final report

- Report introduction
- Methodology
- Incident summary
- Investigators
- Why the incident happened
- Recommendations
- Conclusions
- Appendices

Introduction

Once you are satisfied that you know why the incident happened, write a report in simple, easy-to-understand language:

- explaining what happened and why
- proposing what must be done immediately to prevent the incident from happening again
- proposing what should be done in the longer term to remove fundamental weaknesses in the health and safety systems (if any) that led to the incident

The employer is responsible for taking the corrective action. The committee or representative helps the employer to monitor the effectiveness of the corrective action.

The Act and regulations do not require you to use a specific investigation report format. Select a report format that meets the level of sophistication you require. The one we'll use is in the table on the next page. Adapt it to your needs.

Sample Incident Investigation Report Format

I Introduction
- A Purpose of the investigation
- B What it covers

II Methodology and equipment
- A Techniques, methods and equipment used
- B Sources for information and experts used

III Incident summary
- A Brief description
- B Injuries and losses resulting

IV Why the incident happened
- A Explanation of what happened
- B Description of the three phases of the incident:
  1. Pre-contact
  2. Contact
  3. Post-contact

V Findings and recommendations
- A Causes
  1. Direct
  2. Indirect
  3. Root
- B Recommendations
  1. Short-term recommendations to correct the direct cause of the incident
  2. Long-term recommendations to correct the underlying causes of the incident

VI Conclusions
- A Summary of events
- B Summary of recommendations

VII Appendices
- A Forms used
- B Photographs, maps, and drawings
- C Witness statements
- D Applicable standards
- E Technical terms and abbreviations used
- F Miscellaneous information

Report introduction

The introduction normally:

- provides an overview of the investigation report
- outlines the purpose of the investigation report (to find and correct the underlying causes of the incident and not fix blame)
- discusses what it covers and the extent of the report (such as what health and safety systems were reviewed)

Methodology and equipment

In formal reports and investigations of complex incidents, this section explains the techniques, methods, and equipment used by the investigators, such as gas monitoring processes, engineering analyses, and so forth. It states where technical information in the report comes from and identifies any labs and/or other professional help used.

A discussion of methodology is useful for convincing readers that the investigation is thorough and complete.

Incident summary

Use this section to provide an "executive summary" of the incident and the injuries and losses resulting. Don't state your conclusions here; simply tell the reader what happened, when, where, and how. Include a paragraph identifying who (victims, witnesses, and supervisors) and what (chemicals, equipment, and tools) were involved.

Why the incident happened

This is the "meat" of your report. It tells the reader what happened in detail, but does not provide conclusions or recommendations.

Explain everything you know about the incident here — simply and directly. Describe:

- what happened immediately before the incident (including factors that set the stage for the incident, such as work done on the previous shift)
- what happened during the incident
- what happened immediately after the incident (including what happened during the response to the incident)

Describe who was injured and how seriously. Describe how tools, equipment, and materials were damaged, and the severity of loss.

Describe what information each piece of evidence provides.

Findings and recommendations

Use this section to describe the causes of the incident (direct, indirect, and root) and make your recommendations (short-term and long-term). The first part (findings) will describe the causes and the second part will contain your recommendations.

Findings

Clearly present the facts (evidence) and what conclusions logically flow from them. Make sure that your conclusions about what caused the incident are supported by evidence in the previous sections of the report.

Avoid fixing blame or jumping to conclusions.

Recommendations

Once you've presented your conclusion, propose short-term recommendations to correct the direct cause of the incident and long-term recommendations to correct each of the underlying (root) causes. Where appropriate, include:

- who should see the report (include anyone with authority over the employees, tools, equipment, and materials involved in the incident)
- what corrective actions should be taken
- who should take them
- when — suggest target dates for each recommendation
- what resources are required (money, time, materials, and so on)
- who should monitor the corrective action

Conclusions

Sum up what happened, why, and what to do to prevent a recurrence.

Appendices

Use this section to list:

- forms used
- photographs, maps, and drawings
- witness statements
- applicable standards
- technical terms and abbreviations used, and miscellaneous information

Summary

Once you are satisfied that you know why the incident happened, you must write a report:

- explaining what happened and why
- proposing what must be done immediately to prevent the incident from happening again
- proposing what should be done in the longer term to remove the fundamental causes in the employer's health and safety management system (if any) that led to the incident

The legislation does not require you to use a specific format for your investigation report. Many reports contain this format:

I Introduction

A Purpose of the investigation

B What it covers

II Methodology and equipment

A Techniques, methods and equipment used

B Sources for information and experts used

III Incident summary

A Brief description

B Injuries and losses resulting

IV Why the incident happened

A Explanation of what happened

B Description of the three phases of the incident:

1 Pre-contact

2 Contact

3 Post-contact

V Findings and recommendations

A Causes

1 Direct

2 Indirect

3 Root

B Recommendations

1 Short-term recommendations to correct the direct cause of the incident

2 Long-term recommendations to correct the underlying causes of the incident

VI Conclusions

A Summary of events

B Summary of recommendations

VII Appendices

A Forms used

B Photographs, maps, and drawings

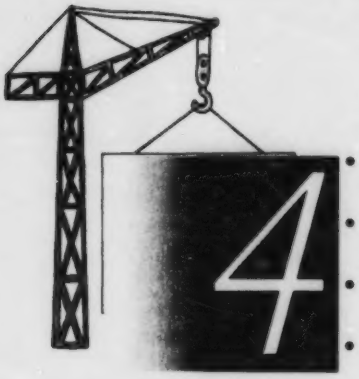
C Witness statements

D Applicable standards

E Technical terms and abbreviations used

F Miscellaneous information

Notes



Take action

- Control hazards
- Correcting weaknesses in the health and safety system
- Assigning responsibilities for implementing corrective action
- Monitoring the effectiveness of corrective action
- Telling the workers what was done

Introduction

Regulation 28 states that on written notice by the committee or the representative of an unsafe condition or a contravention of the law, the employer must:

1 take immediate steps to protect the health and safety of any worker who may be at risk until the unsafe condition is corrected;

2 as soon as possible, correct the unsafe condition; and

3 inform the committee or representative in writing of:

a) the actions that the employer has taken or will take; or

b) the employer's reasons for not taking action.

The employer corrects problems identified in the investigation report. This includes making final decisions about what:

- health and safety system improvements will be made
- hazard controls will be used
- resources will be allocated
- responsibilities and accountabilities will be assigned

The committee or representative helps the employer by providing input and checking the effectiveness of the employer's actions.

The corrective action required to correct problems depends on the needs of each workplace. There is no "master plan" for all workplaces. The employer and workers in each workplace must cooperate to develop solutions suited to their needs.

Use industry health and safety literature (from suppliers, manufacturers, employer associations, and so forth), to identify specific hazard controls for your workplace.

Controlling hazards

Correcting the direct and indirect causes of an accident usually involves controlling specific hazards. The closer a control is to the source of the hazard, the better. First, determine if the hazards can be eliminated or controlled at their source (where the problem is created) through applied engineering. If this does not work, try to put controls between the source and the worker. If this is not possible, control hazards at the worker's level.

One type of hazard control may not be completely effective. A combination of several different types of hazard controls often works well. Whatever method is used, try to find the best control for the root cause of each problem identified in the report. Don't just address the symptoms. For example, it is better to control the cause of an eye injury than to simply issue workers with eye protection.

Control at the source

Elimination – First, try eliminating the hazard. Getting rid of a hazardous job, tool, process, machine, or substance may be the best way of protecting workers. For example, a salvage firm might decide to stop buying and cutting up scrapped bulk fuel tanks (due to explosion hazards).

Substitution – If elimination is not practical, try replacing hazardous substances with something less dangerous. For example, a hazardous chemical can be replaced with a less hazardous one. A safer work practice can be used. Be sure to also identify, assess, and control the hazards of substitutes.

Redesign – Sometimes engineering can be used to redesign the layout of the workplace, workstations, work processes, and jobs to prevent ergonomic hazards. For example, containers can be redesigned to be easier to hold and lift. Engineering may be able to improve workplace lighting, ventilation, temperature, process controls, and so forth.

Isolation – Isolating, containing, or enclosing the hazard is often used to control chemical hazards and biohazards. For example, negative-pressure glove boxes are used in medical labs to isolate biohazards.

Automation – Dangerous processes can sometimes be automated or mechanized. For example, computer-controlled robots can handle spot welding operations in car plants. However, workers must now be protected from robotic hazards.

Control along the path from the hazard to the worker

Hazards that cannot be isolated, replaced, enclosed, or automated can sometimes be removed, blocked, absorbed, or diluted before they reach workers. Usually, the further a control keeps hazards away from workers, the more effective it is.

Barriers – A hazard can be blocked. For example, proper equipment guarding can protect workers from contacting moving parts. Screens and barriers can block welding flash from reaching workers. Machinery lockout systems can protect maintenance workers from physical agents such as electricity, heat, pressure, and radiation.

Absorption – Baffles can block or absorb noise. Local exhaust ventilation can remove toxic gasses, dusts, and fumes where they are produced.

Dilution – Some hazards can be diluted or dissipated. For example, general (dilution) ventilation might dilute the concentration of a hazardous gas with clean, tempered air from the outside. Dilution ventilation is often quite suitable for less toxic products. However, it is not effective for substances that are harmful in low concentrations. It may also spread dusts through the workplace rather than completely removing them.

Control at the worker's level

Sometimes it is not possible to adequately control a hazard at its source or between it and the worker. Workers must then be protected in other ways. Here are a few of the most commonly used controls.

Administrative controls – These include introducing new policies, improving work procedures, and requiring workers to use specific personal protective equipment and hygiene practices. For example, job rotations and scheduling can reduce the time that workers are exposed to a hazard. Workers can be rotated through jobs requiring repetitive tendon and muscle movements to prevent cumulative trauma injuries. Noisy processes can be scheduled when few workers are in the workplace. Standardized written work procedures can ensure that work is done safely. Employees can be required to use shower and change facilities to prevent absorption of chemical contaminants.

The employer is responsible for enforcing administrative controls.

Work procedures, training, and supervision – Supervisors can be trained to apply modern safety management and supervisory practices. Workers can be trained to use standardized safe work practices.

The committee or representative should help the employer periodically review and update operating procedures and worker training. Refresher training should be offered periodically. The employer is expected to ensure that employees follow safe work practices.

Emergency planning – Written plans should be in place to handle fires, chemical spills, and other emergencies. Workers should be trained to follow these procedures and use appropriate equipment. Refresher training should be provided regularly.

Housekeeping, repair, and maintenance programs – Housekeeping includes cleaning, waste disposal, and spill cleanup. Tools, equipment, and machinery are less likely to cause injury if they are kept clean and well maintained.

Hygiene practices and facilities – Hygiene practices can reduce the risk of toxic materials being absorbed by workers or carried home to their families. Street clothing should be kept in separate lockers to avoid contamination from work clothing. Eating areas can be segregated from work areas. Eating, drinking, and smoking should be forbidden in toxic work areas. Where applicable, workers may be required to shower and change clothes at the end of a shift.

Personal protective equipment (PPE) and clothing – PPE and clothing are used when:

- other controls aren't feasible, (for example, to protect workers from noise when they use chainsaws)
- additional protection is needed
- the task or process is temporary (such as periodic maintenance work)

The employer must require workers to use PPE wherever the regulations or organizational work procedures prescribe its use. Workers must be trained to use, store, and maintain their equipment properly. The employer, supervisor, and workers must understand the limitations of their PPE.

Selecting controls

Selecting a control often involves:

- evaluating and selecting temporary and permanent controls
- implementing temporary measures until permanent (engineering) controls can be put in place
- implementing permanent controls when reasonably practicable

For example, suppose an eye injury hazard is identified (such as flying chips from a machine). Temporary measures might require workers to use eye protection. Long-term, permanent controls might use engineering to remove or isolate the source of the flying chips.

Correcting weaknesses in the health and safety system

Experience suggests that the underlying or root causes for many accidents involve weaknesses in the organization's health and safety system, particularly:

- lack of a safety culture (inadequate policies, responsibilities, accountabilities, follow-up mechanisms, attitudes, and so forth)
- inadequate design (facilities, jobs, and so forth)
- inadequate hazard identification and risk assessment
- inadequate or unclear procedures
- insufficient training of workers and supervisors
- insufficient orientation, induction, and supervision of inexperienced workers
- failure to ensure that all employees comply with workplace requirements

Weaknesses in the organization's health and safety system make accidents and loss more likely. That is why it is as important to identify and correct systems defects, as it is to control individual hazards. The corrective action required depends on the needs of each workplace.

Assigning responsibilities for implementing corrective action

The employer should make specific managers and supervisors accountable for implementing each corrective action put forward in the accident report:

- assign specific responsibilities and put them in writing
- accompany assignments with a monitoring system to ensure compliance
- state what consequences follow when health and safety responsibilities are not carried out

Document what was done and keep copies on file.

Monitoring the effectiveness of corrective action

Sometimes the employer's corrective action does not work as well as expected. Therefore, the committee or representative should monitor what was done. To do this, the committee or representative can ask these types of questions during inspections and other activities:

- Has the corrective action controlled the hazards and improved the workplace's health and safety system?
- Is the risk posed by the original hazard/system defect contained?
- Is the risk posed by similar situations in other work areas controlled?
- Have any new hazards been created?
- Are new hazards appropriately controlled?
- Are monitoring and follow-up processes adequate?
- Have workers been adequately informed about the situation?
- Have orientation, training, and the workplace health and safety system been modified to deal with the new situation?
- Are any other measures required?

Document the effectiveness of corrective action.

Telling the workers what was done

Make sure workers know what is happening. Use inspection reports, committee minutes, and so forth to tell them about:

- the hazards and system problems involved in the mishap
- what short-term controls are being used (what is being done now)
- what will be done to remove or permanently control those hazards and fix the health and safety system (long-term controls)

The employer can help by asking supervisors to provide this information to workers during "tool box talks," worker training, and orientation.

The committee or representative can check to see that the corrective action planned for each recommendation is carried out. Find out if the action taken by the employer has solved the problem. Tell your employer about any concerns workers and supervisors have about what was done.

Summary

This includes making final decisions about what system improvements, hazard controls, resources, and accountabilities will be applied.

The committee or representative provides input and checking the effectiveness of the employer's actions.

The corrective action required depends on the needs of each workplace.

In order of effectiveness hazards should be controlled:

1 At their source (where the problem is created) through:

   a) elimination of the hazard

   b) redesign of the work process

   c) substitution of a safer item, material, or substance

   d) automation of the process

2 Between the source and the worker through barriers, isolation, and so forth through:

   a) barriers between the hazard and the workers

   b) absorbing the hazard (noise, chemicals, and so forth)

   c) diluting the concentration of the hazardous substance to an acceptable level

3 At the worker's level through:

   a) administrative controls, including new policies, improved procedures, and practices

   b) improved work procedures, training, and supervision

   c) written emergency plans to handle fires, chemical spills, and other emergencies

   d) housekeeping, repair, and maintenance programs to control contamination and keep the tools and technologies of production working properly

   e) hygiene practices and facilities to reduce the risk of toxic materials being absorbed by workers or carried home to their families

   f) PPE and clothing

Experience suggests that the underlying or root causes for many accidents involve weaknesses in the organization's health and safety system. The corrective action required depends on the needs of each workplace.

The employer should make specific managers and supervisors accountable for implementing each corrective action put forward in the accident report.

Sometimes the employer's corrective action does not work as well as expected. Therefore, the committee or representative should monitor what was done and help the employer to identify any shortcomings.

Make sure workers know what is happening. Use inspection reports, committee minutes, and so forth to tell them what was done.

Appendix

Notes

Resources

I Accident investigation forms

II Equipment and resources checklist

I. Accident investigation forms

- Accident Investigation Report Form
- Accident Investigation Physical Evidence Log Form
- Accident Investigation Site Sketch Form
- Accident Investigation Site Map Form
- Accident Investigation Sketch of Physical Evidence Locations and Operations Form
- Accident Investigation Photographic Log Sheet Form
- Accident Investigation Sketch of Photography Locations and Orientation Form
- Accident Investigation Interview Schedule Form
- Accident Investigation Witness Interview Form

The *Accident Investigation Report Form* provides the supervisor or first responder with a tool to collect initial information at the accident site. This form should be provided to the occupational health committee. The committee can use the more detailed forms in this Appendix to complete its investigation.

Accident Investigation Report Form

(Adapt to suit your needs.)

Company or division:	Department:	
Location:	Date:	Time: AM PM
Reported to OH&S: Yes ❑ No ❑ Date reported:	Contact and phone #:	
Injury or illness	**Type of accident (fall, cut, etc)**	**Property damage**
Name of injured worker(s):	Description:	Description:
Experience:		Severity of damage/loss:
Occupation:	Object or substance inflicting harm:	Collateral damage to equipment/ object/ substance related to accident:
Exact location of accident:		
Part of body affected:	Person in control of activity:	Supervisor:
Seriousness of injury or illness:	Number of work days lost:	
Summarize how the accident happened:		

Accident Investigation Report Form (Adapt to suit your needs.)
Summarize the direct cause here:
Summarize the indirect and root causes here:
What actions are recommended to control the immediate causes of the accident:
What actions are recommended to control the root causes of the accident:

Accident Investigation Report Form

(Adapt to suit your needs.)

Sketch of the accident site:

Site Orientation

Physical evidence collected	Condition	Where stored	Contact person

Witnesses identified	Where and when witnesses work	Phone numbers

Investigator(s)	Position(s)	Signature(s) and date
1.		
2.		

Accident Investigation Physical Evidence Log Form

Item Tag Number	Evidence Description	Original Location	Where Stored	Inventoried & Tagged by (name, signature/ Date/Time)	Acknowledgements of Transfer	
					Released by: (Name/Signature/ Date/Time)	Received by: (Name/Signature/ Date/Time)

Accident Investigation Site Sketch Form

Investigator:

Date/Time:
(Attach a copy of the Position Map Form)

Site Orientation

Accident Investigation Site Map Form

Investigator:

Date/Time:
(Attach a copy of the Site Sketch Form)

Site Orientation

Accident Investigation Sketch of Physical Evidence Locations and Operations Form

Investigator:

Date/Time:
(Attach a copy of the Physical Evidence Log Form)

Site Orientation

Accident Investigation Photographic Log Sheet Form						
Photographer: Camera Type: Lighting Type: Film Roll Number:			Location: Date: Time: Weather (direct sun/overcast, etc):			
Photograph Number	Scene/Subject	Date	Time	Lens Focal Length	Direction of Camera	Distance from Subject

Accident Investigation Sketch of Photography Locations and Orientations Form

Investigator:

Date/Time:
(Attach a copy of the Photography Log Form)

Site Orientation

Accident Investigation Interview Schedule Form					
Date/Time of Interview	Location	Interviewer	Witness	Job/Position	Notes

Accident Investigation Witness Interview Form		
Witness: Position/Title:	Interviewer(s): Position/Title(s)	Page ___ of ___ Date: Time: Place:
Describe what you saw/did/heard before the accident (staple more paper to this form if you need it):		
Describe what you saw/did/heard during the accident:		
Describe what you saw/did/heard after the accident:		

Accident Investigation Witness Interview Form		
Witness: Position/Title:	Interviewer(s): Position/Title(s)	Page ___ of ___ Date: Time: Place:
List questions here that deal with the statement, knowledge of the hazards, job procedures, training, supervision, and so forth.		
List questions here that are not covered by other questions you have asked:		
Ask the witness how he or she thinks the accident could have been prevented:		

II. Equipment and resources checklist

Your employer is responsible for providing the equipment and tools you need. Here are some examples:

- accident investigation forms (witness interview form, photographic log, map form, and so on)
- adhesive labels
- clipboards
- conference/meeting room and resources for interviews
- flashlight
- machinery and equipment lockout supplies
- measuring tape/ruler
- monitoring equipment, (noise meters, etc.)
- office support services for transcribing statements, filing, and so forth
- pens, pencils, chalk, felt markers, and paper
- personal protective clothing and equipment
- plastic Ziplock-type bags and containers for evidence (various sizes)
- sampling containers (for collecting monitoring samples and other physical evidence)
- security barrier tapes and marker poles (to secure the site)
- still/video camera and related equipment
- tape recorder

Bibliography and resource links

This guide is largely based on information developed by The US Department of Energy, Det Norske Veritas (USA), the Saskatchewan Occupational Health and Safety Division, and others. We thank the Department of Energy for graciously letting us use their material.

Publications

- Bird, Frank E. and Germain, George L. *Practical Loss Control Leadership*. Det Norske Veritas (USA), Inc. 4546 Atlanta Highway, Loganville Georgia, 30249, August 1996.
- Department of Energy, Office of Oversight, DOE 19901 Germantown Road, Germantown, MD 20874-1290. *Accident Investigation Program, EH-21*. U.S. Department of Energy, 1999.
- Drogaris, G. *Major Accident Reporting System: Lessons Learned From Accidents Notified.* Commission of the European Communities Joint Research Centre. Amsterdam: Elsevier Publishing, 1993.
- Petersen, Dan. *Analyzing Safety System Effectiveness, Third Edition*. New York: Van Nostrand-Reinhold, 1996.
- Vincoli, Jeffrey W., CSP. *Accident Investigation and Loss Control*. New York: Van Nostrand Reinhold, 1994.

Occupational Health and Safety Division publications and legislation

You can download these publications from the Saskatchewan Labour Web site. Alternatively, contact the Division office in Regina.

- *Elements of An Occupational Health and Safety Program*
- *Occupational Health Committee Manual*
- *Safe Business is Smart Business*
- *Setting Up An Occupational Health and Safety Program, A Guide*
- *The Occupational Health and Safety Act, 1993* and *The Occupational Health and Safety Regulations, 1996* (available only from the Queen's Printer, Saskatchewan Justice)

Internet sites

- CCOHS: http://www.ccohs.ca/oshanswers/hsprograms/hsprograms.htm
- Det Norske Veritas (DNV): http://www.dnvda.com/
- Department of the Energy (US DOE) http://tis.eh.doe.gov/ (*DOE's Accident Investigation Program*)
- Manitoba Workplace Safety and Health Division. *Workplace Safety and Health Self-Audit* publication: http://www.gov.mb.ca/labour/safety/publicat/other/selfaudit.html
- National Safety Council (US): http://www.nsc.org/
- Office of the Queen's Printer (Saskatchewan Justice): http://www.qp.gov.sk.ca/ (the legislation is available in electronic form)
- Saskatchewan Labour homepage: http://www.labour.gov.sk.ca/
- Saskatchewan Workers' Compensation Board homepage: http://www.wcbsask.com/
- Workers' Compensation Board of British Columbia: http://www.worksafebc.com/